CLAIMS

1. Process for the wall ironing of a product in sheet form, which is formed from a metal sheet coated on at least one side with a layer of plastic, the wall-ironing tool comprising a forming surface which the product with a plastic coating layer moves along during the wall ironing, and the forming surface being at an entry angle with respect to the direction of movement of the product, characterized in that the entry angle varies over the length of the forming surface, in the direction of movement of the product past the forming surface, this entry being smaller in a starting zone of the forming surface than in the subsequent zone thereof.

2. Process according to Claim 1, characterized in that the forming surface in an end zone is again at a smaller entry angle than in the intermediate zone.

3. Process according to Claim 1 or 2, characterized in that the forming surface, following the zone with the largest entry angle, comprises a so-called land zone, with an entry angle = 0°.

4. Process according to Claim 2 or 3, characterized in that the entry angle has a fixed value in each of the zones.

5. Process according to Claim 2 or 3, characterized in that there is a smooth change in the entry angle over the length of the forming surface.

6. Process according to Claim 5, characterized in that the transitions between successive zones, and/or such zones themselves run in the form of an arc of a circle.

7. Process according to one of the preceding claims, characterized in that the wall-ironing tool comprises a plurality of forming surfaces.

8. Process according to one of the preceding claims, characterized in that the wall-ironing tool comprises a plurality of wall-ironing rings.

9. Process according to one of the preceding claims, characterized in that 60 to 90% of the total wall thinning is produced by the corresponding forming surface in the zone running at the largest entry angle, the so-called main zone.

10. Process according to Claim 9, characterized in that 10 to 30% of the total wall thinning is produced by the corresponding forming surface in the starting zone.

11. Process according to Claim 9 or 10, characterized in that less than 30% of the total wall thinning is produced by the corresponding forming surface in the end zone.

12. Process according to one of the preceding claims, characterized in that the length of the starting zone and/or of the end zone, under otherwise identical conditions, is set in such a way that the plastic coating is not torn off the metal sheet as a result of the wall ironing.

13. Process for the wall ironing of a product in sheet form, which is formed from a metal sheet coated on at least one side with a layer of plastic, the wall-ironing tool comprising a forming surface which the product with a plastic coating layer moves along during the wall ironing, and the forming surface being at an entry angle with respect to the direction of movement of the product, characterized in that, in a zone of the forming surface which runs at the largest entry angle, the plastic layer is held under an elevated pressure P_0 (in MPa) on all sides, and that the plastic used for the coating layer is characterized by values of the parameters μ (no units); τ_0 (in MPa) and A_0 (in sec), as defined in the description, which are as follows:

$\mu \geq 0.03$; $\tau_0 \geq 0.60$ and $A_0 \geq 2.0 \times 10^{19}$.

14. Process according to Claim 13, characterized in that the parameters μ, τ_0 and A_0 are as follows: $\mu \geq 0.047$; $\tau_0 \geq 0.90$ and $A_0 \geq 3.0 \times 10^{19}$.

15. Process according to Claim 13 or 14, characterized in that the plastic used is also characterized by values for the parameters $T_{g,\ 1\ atm}$ and $T_{g,\ 600\ MPa}$ (in °C), as defined in the description, which are as follows: $T_{g,\ 1\ atm} \geq 30°C$ and $T_{g,\ 600\ MPa} \geq 200°C$.

16. Process according to Claim 15, characterized in that the parameter $T_{g,\ 1\ atm}$ is as follows: $T_{g,\ 1\ atm} \geq 70°C$.

17. Wall-ironing tool, in particular a wall-ironing ring, comprising a forming surface, along which a sheet-like product can be moved during the wall ironing, which forming surface is at an entry angle with respect to the direction of movement of

the product, characterized in that the entry angle varies over the length of the forming surface, in the direction of movement of the product, this angle being smaller in a starting zone of the forming surface than in the subsequent zone thereof.

18. Wall-ironing tool according to Claim 17, characterized in that the forming surface in an end zone is again at a smaller entry angle than in the intermediate zone.

19. Wall-ironing tool according to Claim 17 or 18, characterized in that between the intermediate zone and the end zone there is a land zone with a length of between 0.3 and 1.5 mm.

20. Wall-ironing tool according to one of Claims 17-19, characterized in that the entry angle has a fixed value in each of the zones.

21. Wall-ironing tool according to one of Claims 17-19, characterized in that there is a smooth change in the entry angle over the length of the forming surface.

22. Wall-ironing tool according to Claim 21, characterized in that the transitions between successive zone, and/or the zones themselves, run in the form of an arc of a circle with a radius of a length of between 0.1 and 10 mm.

23. Wall-ironing tool according to one of Claims 17-22, characterized in that the main zone forms between 60 and 90% of the transverse dimension of the forming surface, transversely with respect to its longitudinal direction.

24. Wall-ironing tool according to Claim 23, characterized in that the starting zone forms between 10 and 30% of the transverse dimension of the forming surface.

25. Wall-ironing tool according to Claim 23 or 24, characterized in that the end zone forms less than 30% of the transverse dimension of the forming surface.

26. Wall-ironing tool in the form of a wall-ironing ring, according to one of Claims 17-25, characterized in that this wall-ironing ring is under a radial prestress on its outer circumferential surface, due to a strip or wire which has been wound around it under stress.